



Attorney Docket: 00039.09CON

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Joshua D. Rabinowitz, et al.) Examiner: M. Haghighatian
Serial No.: 10/749,535) Group Art Unit: 1616
Filing Date: December 20, 2003) Confirmation No.: 8875
For: DELIVERY OF ERECTILE)
DYSFUNCTION DRUGS THROUGH AN)
INHALATION ROUTE)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Applicant calls the Examiner's attention to the patents and publications listed on the attached Form PTO-1449, copies of required documents enclosed, which may be material to examination of the above identified application. The Examiner is requested to make these documents of record.

TIME OF TRANSMITTAL

This Information Disclosure Statement is being submitted under 37 CFR § 1.97(c). This Statement is filed after three months from the filing date of the national application, after three months from the date of entry into national stage under 37 CFR § 1.491, after the mailing of a first Office Action on the merits, or after the mailing of a first Office Action after the filing of a request for continued examination under 37 CFR § 1.114, but before the mailing date of any of:

- (a) a final action under 37 CFR § 1.113;
- (b) a notice of allowance under 37 CFR § 1.311; or
- (c) an action that otherwise closes prosecution in the application.

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on May 31, 2005

Signature: Tracy E. Crispino
Name: Tracy E. Crispino

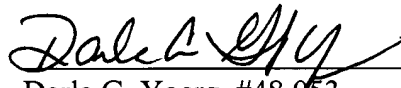
This Statement is accompanied by a check for \$180.00 in accordance with 37 CFR §§1.97(c) and 1.17(p). The undersigned hereby authorizes the charging of any deficiency of fees submitted herewith to Deposit Account No. 19-5117.

Documents listed in the attached Form PTO-1449 and numbered 1, 8, 10-13, 17, 18, 20, and 22-33 are office actions, and the references relied upon therein, issued with respect to co-pending and co-owned applications directed to subject matter that is similar or related to the subject matter of the present invention. Documents listed in the attached Form PTO-1449 and numbered 2-7, 9 and 14-16 are described in the "Background of the Invention" section (page 3, line 23 to page 4, line 19) of priority document U.S. provisional patent application Serial No. 60/294,205 filed May 25, 2001 (attached hereto as Exhibit A). Documents listed in the attached Form PTO-1499 and numbered 19 and 21 were cited with respect to the parent application USSN 10/155,703, now U.S. Patent No. 6,803,031. Finally, consistent with our previous disclosures in this application, documents listed in the attached Form PTO-1449 and numbered 34-49 are co-pending and co-owned applications directed to subject matter that is similar or related to the subject matter of the present invention. This updates the list of such applications that were previously disclosed.

The filing of this Information Disclosure Statement shall not be construed as an admission against interest in any manner. This listed patents and publications are believed of interest herein and consideration and citation of as interest by Examiner is respectfully requested.

Respectfully submitted,

Date: May 31, 2005



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to the Bernoulli effect, as described in U.S. Patent No. 5,511,726 to Greenspan et al. The low pressure is used to draw the fluid to be aerosolized out of a second tube. This fluid breaks into small droplets as it accelerates in the air stream. Disadvantages of this standard nebulizer design include relatively large particle size, lack of particle size uniformity, and low densities of small particles in the inhaled air.

Newer liquid aerosol technologies involve generating smaller and more uniform liquid particles by passing the liquid to be aerosolized through micron-sized holes. U.S. Pat. No. 6,131,570 to Schuster et al.; U.S. Pat. No. 5,724,957 to Rubsamen et al.; and U.S. Pat. No. 6,098,620 to Lloyd et al. describe the use of pressure generated by a piston to push fluid through a membrane with laser drilled holes. U.S. Pat. Nos. 5,586,550; 5,758,637; and 6,085,740 to Ivri et al.; and U.S. Pat. No. 5,938,117 to Ivri describe the use of vibration to move fluid through apertures in a shell that are larger on the fluid-coated side.

A limitation of both of these technologies is that they can deliver only very small quantities of liquid solution, e.g., less than 50 microliters, in a single breath. Because the solubility of many drug compounds in water or other solvents suitable for liquid aerosol delivery is low, the total quantity of drug that can be delivered in a single breath is quite small. In addition, the aerosol particle sizes generated by these methods, while small enough to result in substantial alveolar deposition in some cases, result in substantial non-alveolar deposition as well (Heyder et al., *Journal of Aerosol Science* 17:811-825 (1986); Dershwitz et al., *Anesthesiology* 93:619-628 (2000)).

Vaporizing drugs may provide a method of maximizing alveolar delivery and rapidly delivering drugs to target organs. Scented candles and oil lamps are known to volatilize various fragrances and herbal remedies when the wax or oil is heated. For example, U.S. Pat. No. 5,840,246 to Hammons et al. describes an oil lamp that volatilizes insect repellent compositions, deodorizing compositions, medicinal compounds, herbal compositions, and disinfectant compositions. U.S. Pat. No.

5,456,247 to Schilling et al. describes the administration of vaporized sulfamethazine, sulfamethoxazole, sulfamethoxine, and gentamicin by inhalation of the vapor in a treatment chamber. Portable vaporizers and humidifiers that volatilize various compounds are also known. U.S. Pat. Nos. 4,734,560 and 4,853,517 to Bowen
5 describe a vaporizing unit for medications, room deoderizers, room scenting compounds, and room insecticides. U.S. Pat. No. 4,566,451 to Badewien relates to a device that vaporizes medicated liquid. U.S. Pat. Nos. 4,906,417 to Gentry and 3,982,095 to Robinson describe humidifiers that vaporize medication. In the preceding examples, the vaporization of compounds occurs freely into air.

10 International application WO 94/09842 to Rosen describes a device with an electric heating element that vaporizes a predetermined amount of some agents. U.S. Pat. Nos. 4,917,119 to Potter et al.; 4,941,483 to Ridings et al.; 5,099,861 to Clearman et al.; 4,922,901 to Brooks et al.; and 4,303,083 to Buruss, Jr. also describe hand-held devices that vaporize various medications.

15 However, the heat required to vaporize a drug often also generates degradation products, which may decrease the efficacy of the thermal vapor and are undesirable to be delivered to the patient. Thus, a method that enhances drug volatilization without the formation of a substantial amount of degradation products is needed.

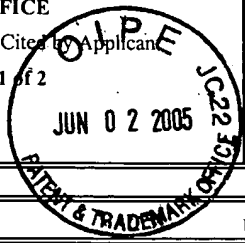
20 Therefore, an object of the present invention is to provide a drug with desirable properties for thermal vapor delivery. Such improvement may involve providing a modified drug with enhanced volatility.

Another object of the invention is to provide a thermal vapor for inhalation therapy that does not contain a significant amount of thermal degradation products.

25 Yet another object of the invention is to provide a form of inhalation therapy where patients can titrate their intake of a drug.

These and other objects of the present invention will become apparent in light of the specific examples and description set forth hereinafter. All publications,

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| FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE List of Information Cited by Applicant Page 1 of 2 | ATTY. DOCKET NO. 00039.09CON | | SERIAL NO. 10/749,535 |
| | APPLICANT Rabinowitz, et al. | | |
| | FILING DATE December 30, 2003 | | GROUP 1616 |
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| U.S. PATENT DOCUMENTS | | | | | | | |
|-----------------------|-----|--------------------|----------|------------------|-----|-------------|--------------|
| EXAM. INITIAL | | DOCUMENT NUMBER | DATE | NAME | CLS | SUB- CLS | FILE DATE |
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| | 2. | 4,566,451 | 01/28/86 | Badewien | | | |
| | 3. | 4,734,560 | 03/29/88 | Bowen | | | |
| | 4. | 4,853,517 | 08/01/89 | Bowen | | | |
| | 5. | 4,303,083 | 12/01/81 | Buruss, Jr. | | | |
| | 6. | 5,099,861 | 03/31/92 | Clearman et al. | | | |
| | 7. | 4,906,417 | 03/06/90 | Gentry | | | |
| | 8. | 4,735,217 | 04/05/88 | Gerth | | | |
| | 9. | 5,840,246 | 11/24/98 | Hammons et al. | | | |
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| | 12. | 5,146,915 | 09/15/92 | Montgomery | | | |
| | 13. | 5,918,595 | 07/06/99 | Olsson et al. | | | |
| | 14. | 4,917,119 | 04/17/90 | Potter et al. | | | |
| | 15. | 4,941,483 | 07/17/90 | Ridings | | | |
| | 16. | 3,982,095 | 09/21/76 | Robinson | | | |
| | 17. | 5,605,146 | 02/25/97 | Sarela | | | |
| | 18. | 5,456,247 | 10/10/95 | Schilling et al. | | | |

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| EXAM. INITIAL | | DOCUMENT NUMBER | DATE | COUNTRY | CLS | SUB CLS | TRANS ? |
| | 19. | EP 0 967 214 | 12/29/99 | Europe | | | |
| | 20. | WO 94/09842 | 05/11/94 | PCT | | | |
| | 21. | WO 00/66084 | 11/09/00 | PCT | | | |

| OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) | | |
|---|-----|--|
| | 22. | Office Action mailed 12/04/03 for US App. No. 10/057,198 filed 10/26/01 "Method And Device For Delivering A Physiologically Active Compound" |
| | 23. | Office Action mailed 01/12/05 for US App. No. 10/057,197 filed 10/26/01, "Aerosol Generating Device And Method" |
| | 24. | Office Action mailed 06/03/04 for US App. No. 10/057,197 filed 10/26/01, "Aerosol Generating Device And Method" |
| | 25. | Office Action mailed 12/15/03 for US App. No. 10/057,197 filed 10/26/01, "Aerosol Generating Device And Method" |
| | 26. | Office Action mailed 02/27/04 for US App. No. 10/146,080 filed 05/13/02, "Aerosol Forming Device For Use In Inhalation Therapy" |
| EXAMINER | | DATE CONSIDERED |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. | | |

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| FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE List of Information Cited by Applicant Page 2 of 2 | ATTY. DOCKET NO. 00039.09CON | SERIAL NO. 10/749,535 |
| | APPLICANT Rabinowitz, et al. | |
| | FILING DATE December 30, 2003 | GROUP 1616 |

| U.S. PATENT DOCUMENTS | | | | | | | |
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| | 28. | 5,649,554 | 07/22/97 | Sprinkel et al. | | | |
| | 29. | 5,592,934 | 01/14/97 | Thwaites | | | |
| | 30. | 6,632,047 | 10/14/03 | Vinegar | | | |
| | 31. | 5,894,841 | 04/20/99 | Voges | | | |
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| | 36. | 10/146,088 | 05/13/02 | Hale et al. | | | |
| | 37. | 10/280,315 | 10/25/02 | Shen | | | |
| | 38. | 10/322,227 | 12/17/02 | Novack et al. | | | |
| | 39. | 10/442,385 | 05/20/03 | Cross et al. | | | |
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| | 41. | 10/850,895 | 05/20/04 | Damani et al. | | | |
| | 42. | 10/851,429 | 05/20/04 | Hale et al. | | | |
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| | 46. | 10/851,018 | 05/20/04 | Hale et al. | | | |
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| | 48. | 10/917,720 | 08/12/04 | Hale et al. | | | |
| | 49. | 10/912,417 | 08/04/04 | Bennett et al. | | | |
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| OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) | | |
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| EXAMINER | DATE CONSIDERED | |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and <u>not</u> considered. Include copy of this form with next communication to applicant. | | |